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cultures (14%) reported in the literature (11), either a bias in patient recruitment or in the selection of follow-up duration should also be taken into account. Therefore, microbiological, echocardiographic, and treatment information is essential to clarify the reason for the false-negative cases at ^{18}F-FDG-PET/CT, particularly for high pre-test likelihood. None of the diagnostic techniques available represent by themselves the "magic" tool: the application of patients' tailored strategies starting from the multidisciplinary comprehensive interpretation of clinical history and complete clinical characterization to identify the most suitable diagnostic test rather then the use of the single best test will be the strategy to increase the diagnostic accuracy, therefore impacting patients' management.

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Clinical Utility of ^{18}F-FDG Positron Emission Tomography and Computed Tomography in Patients With Suspected Cardiovascular Implantable Electronic Device Infection

Sarrazin et al. (1) highlighted the usefulness of positron emission tomography (PET)/computed tomography (CT) in patients with suspected cardiovascular implantable electronic device infection (CIED). The following points should be considered before reaching a final conclusion.

1. Guidelines recommend avoiding fluorodeoxyglucose (FDG)-PET scans when blood glucose level is >200 mg% in patients with cancer because hyperglycemia compromises the diagnostic ability by decreasing FDG uptake (2,3). Did the authors make an attempt to study the impact of hyperglycemia on the sensitivity and specificity of the scan because hyperglycemia is common in patients with CIED infection?
2. In the study by Sarrazin et al. (1), how many patients received antibiotic therapy before the scan and for how long of a duration? What was the impact of prior antibiotic therapy on the sensitivity and specificity of the scan?
3. Increased FDG uptake is nonspecific and may be increased in the setting of inflammation, infection, malignancy, or clot formation, whereas it may be decreased in patients with leukopenia even in the presence of infection (4,5).
4. What is the impact of the scan results on patient management? This question remains unanswered because the decision to treat was not based on scan findings. Larger-scale prospective studies with longer follow-up periods (to rule out any latent infection) are required before supporting a conservative approach for negative scans in patients with bacteremia.

Considering high scan cost, FDG-PET/CT should only be used as an adjunct diagnostic test in selective patients with CIED in whom routine workup of fever (including transesophageal echocardiography) remains inconclusive.

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Reply

We thank Dr. Erba and colleagues as well as Dr. Sharma for their interest in our paper (1). In the letter from Dr. Erba and colleagues, they suggested different rates of false-positive and false-negative results with ^{18}F-fluorodeoxyglucose (FDG) positron emission tomography (PET)/computed tomography (CT). We agree that diagnosis of device infection should not be limited to a single test. Conventional testing, clinical judgment, and practice according to guidelines remain critical. However, our published data and additional personal experience using this technology showed that the addition of PET/CT could be of great value in difficult cases. It is common to use a group of patients with higher disease prevalence to demonstrate a proof of concept. Tests were also performed in 2 lower-risk control groups with recent device surgery or no active infection. We are aware that Ploux et al. (2) had FDG uptake on leads in 7.5% of controls; however, no information is available on recent antibiotic use, whether attenuation-corrected or noncorrected images were used, and follow-up duration because this observation could be related to early signs of infection. The negative predictive value of PET/CT is useful, as demonstrated in our study of 10 patients having an excellent evolution with no late recurrence following conservative treatment at 15 months. Further studies are required to better understand causes for false-positive and false-negative results. Our study was not powered to examine the sensitivity/specificity of PET/CT with different micro-organisms. Head-to-head comparison between ^{99m}Tc–hexamethylpropyleneamine oxime–leukocyte single-photon emission CT/CT and ^{18}F-FDG PET/CT could be useful. There was no bias in patient recruitment because all patients were recruited consecutively. All patients were followed up until the end of the study. In conclusion, we do not believe that PET/CT is a "magic" test, but it should now be considered as an additional tool for decision making.

In response to the second letter by Dr. Sharma, our study was not intended to evaluate the impact of hyperglycemia on PET/CT. Patients with blood glucose >8 mmol/l (>144 mg/dl) received intravenous rapid-acting insulin 1 h prior to FDG injection. All patients underwent PET/CT within 48 h of initiation of antibiotic therapy. However, we agree that prior antibiotic therapy could have an impact on test results. False-positive results can occur with Dacron pouches, inflammation, or hematoma, but FDG uptake is usually higher with infection. We agree that further studies with longer follow-up are required. We do not believe that PET/CT should be used in all cases, but it appears useful in patients with cardiac device and fever of unknown origin, as well as in patients for which knowledge of the extent of infection could change the decision to perform device and lead extraction.

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